

U.S. Patent Serial No. 10/661,479  
Art Unit 3754  
Page 2

**IN THE DRAWINGS:**

Please replace and enter Figs. 1-5 and 7 with the accompanying drawing pages each entitled "REPLACEMENT SHEET."

It should be noted that the aforementioned drawing figures are being amended to provide numerical characters to certain features of the claimed invention.

I.  
**35 U.S.C. 103 REJECTIONS**

Claims 1-10 & 13-21 are rejected under 35 U.S.C. 103(a) as unpatentable over U.S. Patent No. 6,338,370 to Edwards in view of U.S. Patent No. 3,865,281 to Byrd et al. ("Byrd"). Claim 11 is rejected under 35 U.S.C. 103(a) as unpatentable over Edwards in view of Byrd and further in view of U.S. Patent No. 4,437,498 to Pankratz et al. ("Pankratz"). Claim 12 is rejected under 35 U.S.C. 103(a) as unpatentable over Edwards in view of Byrd and further in view of U.S. Patent No. 5,957,343 to Cavallaro.

The foregoing rejections are rendered moot in view of the amendments to the claimed invention. Applicant respectfully contends that the claims as presently amended are patentably distinct over the cited references for at least the following reasons.

**A. Metes and Bounds of the Claimed Invention**

Claims 1-12 as presently amended are directed generally to a sanitary fill valve assembly including, *inter alia*:

"a product flow regulator extending substantially perpendicular relative to said product dispenser, said inlet passage and said outlet passage for adjustably regulating the rate of flow of the viscous flowable material into said chamber." (Emphasis added).

Claim 13 as presently amended is directed generally to a sanitary fill valve assembly including, *inter alia*:

"an adjustably moveable product flow regulator disposed in said flow path for adjustably regulating the flow rate of the viscous flowable material by at least one of reducing and increasing the flow area into said chamber to accommodate viscous flowable materials having different physical properties, said product flow regulator having a pair of stop means for limiting the movement of said product flow regulator." (Emphasis added).

Claim 14 as presently amended is directed generally to a sanitary fill valve assembly including, *inter alia*:

"a product flow regulator having a regulator body disposed intermediate of said inlet passage and said chamber, wherein a distal end portion of said regulator body combines with said inlet passage to form a flow channel at the mouth of said inlet passage through which the viscous flowable material flows into said annular chamber, the width of said flow channel being automatically adjustable to regulate the flow rate of the viscous flowable material before entry into the annular chamber." (Emphasis added).

Claims 15-19 as presently amended are directed generally to a sanitary fill valve assembly for accommodating viscous flowable materials having different physical properties, said sanitary fill valve including, *inter alia*:

"a product flow regulator in communication with said inlet passage and said chamber for adjustably regulating the rate of flow of the viscous flowable material into said chamber by reducing and/or increasing a flow area into said chamber, wherein said product flow regulator is positioned in said valve housing such that it reciprocates in directions substantially perpendicular to said product dispenser, said inlet passage and said outlet passage." (Emphasis added)

Claims 20 & 21 as presently amended are directed generally to a process for hygienically filling a container with a viscous flowable material, including, *inter alia*, the step of:

"providing a flow regulator between said chamber and said inlet and substantially perpendicular in relation to said inlet and said outlet."

## **B. Non-obvious Advantages of the Claimed Invention**

In view of the foregoing claimed features, Applicant respectfully submits that the claimed invention provides for a sanitary fill valve assembly that efficiently dispenses and meters a predetermined amount of viscous flowable material by utilizing an adjustable flow regulator situated substantially perpendicular in relation to the inlet passage and the outlet passage. Such flow regulation permits the sanitary fill valve to

accommodate variations in the physical characteristics of the viscous flowable material such as temperature, viscosity, density, pumping pressure, etc.

Another advantage of the claimed invention is the use of a flow regulator having a regulator body disposed for reciprocating movement in the chamber and at the inlet channel through which the liquid product flows. Moreover, the tip portion of the regulator body combines with the inlet passage to create a flow path through which the viscous flowable material may flow into the valve chamber.

Thus, the sanitary fill valve assembly of the claimed invention can precisely fill an interior cavity of a vessel, container or the like without undesirable turbulence, frothing, sloshing and agitation of the viscous flowable material. Moreover, the flow rate of the viscous flowable material can be automatically adjusted by either reducing or increasing the flow area into the valve chamber to accommodate viscous flowable materials having different physical properties.

### **C. The Claimed Product Flow Regulator**

The claimed invention requires, *inter alia*, (i.) a product dispenser 20 for dispensing the viscous flowable material from the valve chamber; and (ii.) a product flow regulator 40.

Referring now to the Office Action, particularly the rejection of claims 1-10 & 13-21, the Examiner finds that while Edwards discloses a sanitary fill valve assembly, it "does not discloses[sic] a product flow regulator for adjustably regulating the rate of flow of viscous flowable material into the chamber."

Thus, Byrd was combined with Edwards since it purportedly discloses:

"a product flow regulator (250, fig 11) for adjustably the rate of flow (by up/down movement) of the viscous flowable material into the chamber (228, fig 11)."

Moreover, the "product flow regulator (250, fig 11)" purportedly disclosed in Byrd is also characterized by the Examiner as:

"being disposed in a flow path (from inlet 218 to outlet 234) between inlet passage (218) and the chamber to at least one of reduce (upward movement) and increase (downward movement) the flow area at the flow path."

Byrd, however, lacks any such disclosure of a product flow regulator, or even one having the specific characteristics set forth in the rejected claims. The express teachings of Byrd clearly describe item 250 as "a land area" connectable to control valve spool 246 that reciprocates between valve chamber portions 222 and 226 to facilitate the dispensing of product from the valve chamber through nozzle 234 and into container 58. Col. 8, lines 47 et seq.; Col. 11, lines 4-8 and 26-33.

In essence, Byrd discloses a control valve spool sealed within a chamber for vertical movement therein, a drive mechanism for the driving spool, and a mechanically-driven piston assembly for varying the amount of product dispensed into the containers.

Since both Edwards and Byrd merely disclose a dispensing mechanism for dispensing the fluid into a container, the resultant combination would not render the claimed invention obvious to one of ordinary skill.

#### **1. Spatial Location of the Product Flow Regulator Relative to the Inlet/Outlet**

Moreover, the claimed invention requires situating the flow regulator substantially perpendicular relative to the inlet and outlet passages and directly in front of the inlet passage. This feature is particularly illustrated at least in Fig. 1 of Applicant's detailed drawings, whereby the regulator body 41 is disposed in the path of flow in the inlet channel 13 to positively adjust the flow rate of the liquid product L by reducing

and/or increasing the flow area into the chamber 12 in relation to the varying physical characteristics (temperature, viscosity, density, pumping pressure, etc.) of the liquid product L. This provides protection against sloshing, dripping and undue turbulence during a dispensing operation.

Byrd discloses a valve spool 246 mounted for vertical sliding movement relative to inlet 216 and outlet 236, and a piston 230 for pumping a liquid product from the chamber. Specifically, the valve spool merely allows a certain amount of fluid to flow freely into cylinder 228. Col. 8, lines 58-65. The structural design of the Byrd device is such that valve spool 246 or piston 230 does not impede the flow path of the fluid product directly at the inlet 218. In particular, the land area 250 of valve spool 246 is not spatially positioned substantially perpendicular to the inlet and outlet passages as required by the claimed invention. Particularly, as clearly shown in Figs. 11 & 12 of Byrd, the land area 250 is actually positioned downstream of inlet passage 218 which empties product into chamber portion 222. Moreover, the section of valve body 202 at the distal end of chamber portion 222 is equipped with a pair of shoulders which prevent land area 250 from moving into the direct flow path at the inlet passage.

Pankratz discloses carton filling apparatus 22 that includes a vertical passage having an inlet at its upper end which communicates with storage tank 24 (Col. 3, lines 3-5), an outlet passage 28A/28B, a chamber 32, a "vertically oriented" valve member 64 for controlling liquid flow through the vertical passage (Col. 2, lines 66-66; Col. 3, lines 11-13), and a drive mean in the form of a pumping cylinder 34 for driving the chamber dispensing the liquid from chamber 32. Pankratz lacks the claimed spatial features of the claimed flow regulator since its valve member 64 is situated parallel to both the inlet and the outlet. In fact, the Pankratz device operates much like the Byrd device inasmuch as it utilized a vertically

## **2. Flow Regulator Having a Pair of Stop Means**

In accordance with the claimed invention, the sanitary fill valve assembly requires a product flow regulator having a pair of stop means for limiting the movement of said product flow regulator. This feature is illustrated at least in Figs. 1-5 & 7, whereby first stop means 50 is provided on the adjustment nut 46 and second stop means 51 is provided on the regulator body 41. The pair of stop means 50, 51 combine to limit the distance from which the regulator body 41 adjustably extends towards the chamber 12.

Such features are not taught, disclosed or suggested by the cited references.

## **3. The Physical Characteristics of the Product Flow Regulator**

The cited combination of references also lack a flow regulator having a regulator body that combines with the inlet passage to form a flow channel through which the viscous flowable material flows into the annular chamber. This feature is illustrated in FIG. 4, which shows a tip portion 44 of the regulator body 41 combining with a corner sidewall portion of the inlet channel 13 to create a flow passage or channel through which the liquid product L flows into the valve chamber 12.

This feature is advantageous in minimizing turbulent flow into the chamber and preventing undesirable splashing and gas bubble formation during a dispensing operation. This is further advantageous in maintaining consistent flow rates of the liquid product, and thus, more rapid and precise dispensing of the liquid product.

None of the cited references teaches such a feature, and thus, the non-obvious advantages of the claimed invention cannot be achieved.

**4. Basis of Flow Regulation**

Moreover, none of the cited references provides for any discussion about the effect of the physical characteristics of the viscous flowable material on fluid flow regulation. Particularly, none of the cited prior art references teach, disclose or reasonably suggest an adjustable product flow regulator that automatically adjusts the flow rate of the viscous flowable material in relation to its physical characteristics, e.g., density, pump pressure, viscosity, compressibility, etc.

In essence, the structural design of the cited devices permit unwanted turbulent flow of the liquid product during a dispensing operation, which results in sloshing, splashing, bubble formation, etc..

**CONCLUSION**

Accordingly, as it has been shown that the combined references cited by the Examiner lack any teaching, disclosure or suggestion for the aforementioned features of Applicant's claimed invention, it is respectfully requested that the rejection of the claims be withdrawn.

In view of the foregoing remarks, Applicant respectfully contends that the pending claims are in condition for allowance.

In the event that there are any questions relating to this Amendment or to the application in general, it would be appreciated if the Examiner would telephone the undersigned attorney concerning such questions so that prosecution of the instant application may be expeditiously closed.



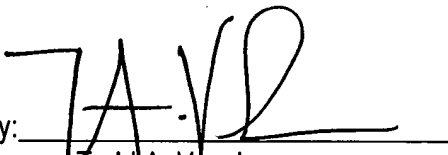
U.S. Patent Serial No. 10/661,479  
- Art Unit 3754  
- Page 19

While no fees are believed to be necessary with respect to the filing of this response, the Commissioner is hereby authorized to charge any official fees or credit any fees or deficiencies with respect to the filing of this response or this application to Deposit Account No. 18-2361.

Respectfully submitted,

BRENEMAN & GEORGES

Dated: August 12, 2005

By:   
Todd A. Vaughn  
Registration No. 52,319

3150 Commonwealth Avenue  
Alexandria, VA 22305  
Tel.: 703.683.8006  
Fax: 703.683.8009